

Straw Bale Construction

Factsheet from Coconino County Sustainable Building Program

Straw bale construction uses baled straw from wheat, oats, barley, rice, and rye in walls. (Straw is the dry plant material left over from grains that have already been harvested. In many states straw is burned at the end of the harvesting season, which can contribute to poor quality.) Straw bale homes were first built in Nebraska at the turn of the century. As a testament to the durability of this material - many of these homes are still standing today.

Types of straw bale construction: There are two types of straw bale construction - post-and-beam construction with straw bale walls, and structural strawbale construction, where the roof rests on the straw bale walls. The first uses a timber or steel frame to support the roof and straw bales create the walls. In the second system a wood plate is placed on top of the straw bale wall. A threaded bar pierces the top bales to fasten the plate to the walls. The roof trusses are then secured to the wood plate. Load-bearing strawbale homes are NOT/ARE?? permitted in Coconino County.

Why Build a Straw Bale House? : Two hundred million tons of straw are burned annually in the US. The weather resistance in straw is not desirable in agricultural but is a good attribute for home-building material. Straw is an ecological sound choice, extremely durable and makes an excellent insulator in homes. Straw is just as durable as wood, and as long as you protect it from water (which you must do with a wood frame house as well) it will last as long as any other traditionally built house. When straw is sealed with stucco, straw is extremely pest and fire resistant. Building with straw can often be done with unskilled labor which can cut down on building costs.



photo courtesy of Ed Dunn

Advantages: Good insulation value, good ecological choice of materials, very quiet.

Appearance/Style: Stuccoed on the outside and inside.

Structural Requirements : In Coconino County, straw bale homes must have a traditional post-and-beam support system.

Energy Efficiency : Insulating values for straw bale range from R-30 to R-45, depending on bale thickness. Energy savings can be from 50 to 75%.

Recycled Content: Straw bale is considered a waste product. In many cases it only constitutes the walls and not the rest of the support frame.

Health Issues: Allergy considerations.

Ease of Construction: A standard foundation is usually built. Stacking the bales is hard but fairly unskilled work. With a post-and-beam construction, the roof is put on first and the hay then stacked to form the walls.

Cost estimates: Comparable in price to traditional wood frame. Post-and-beam straw bale homes use about 15% less wood.

Availability : Straw bale comes from a variety of sources throughout Arizona depending on availability.

Publications :

The Straw Bale House, Athena & Bill Steen et al. 1994, 336pg,

Build It With Bales : A Step-By-Step Guide to Straw-Bale Construction, MacDonald and Myhrman, 1998.

Serious Straw Bale: A Home Construction Guide for All Climates, Lacinski and Begeron, 2000.

Web Resources :

www.dcat.net - *Development Center for Appropriate Technology*

www.strawhomes.com - *Strawbale resources*

www.greenbuilder.com/dawn - *Sustainable building workshops*

www.greenbuilder.com/sourcebook/strawbale.html - *Strawbale building registry and resources*

www.greenhomebuilding.com - *Info on sustainable building*

Local Resources:

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